

CLAIM

1. A process for decreasing the amount of cholesterol in a mixture comprising a marine oil, the marine oil containing the cholesterol, characterized in that the process comprises the steps of;  
-adding a volatile working fluid to the mixture, where the volatile working fluid comprises at least one of a fatty acid ester, a fatty acid amide and a hydrocarbon, and  
-subjecting the mixture with the added volatile working fluid to at least one stripping processing step, in which an amount of cholesterol present in the marine oil in free form is separated from the mixture together with the volatile working fluid.

2. A process according to claim 1, wherein the volatile working fluid is essentially equally or less volatile than the cholesterol in free form that is to be separated from the marine oil mixture.

3. A process according to claim 1, wherein said at least one of a fatty acid ester and a fatty acid amide constituting said volatile working fluid is obtained from at least one of a vegetable, microbial and animal fat or oil.

4. A process according to claim 3, wherein the animal fat or oil is a marine oil.

5. A process according to claim 1, wherein the volatile working fluid comprises at least one fatty acid ester composed of C10-C22 fatty acids and C1-C4 alcohols, or a combination of two or more fatty acid ester each composed of C10-C22 fatty acids and C1-C4 alcohols.

6. A process according to claim 1, wherein the marine oil containing saturated and unsaturated fatty acids in the form of triglycerides, and the marine oil is obtained from fish or sea mammals.

5        7. A process according to claim 1, wherein the ratio of (volatile working fluid):(marine oil) is about 1:100 to 15:100.

8. A process according to claim 7, wherein the ratio of (volatile working fluid):(marine oil) is about 3:100  
10 to 8:100.

9. A process according to claim 1, wherein said stripping processing step is carried out at temperatures in the interval of 120-270 °C.

10. A process according to claim 1, wherein said  
15 stripping processing step is carried out at temperatures in the interval of 150-220 °C.

11. A process according to claim 1, wherein said stripping processing step is carried out at a pressure below 1 mbar.

20        12. A process according to claim 1, wherein the at least one stripping processing step is one of a thin-film evaporation process, a molecular distillation or a short-path distillation or any combination thereof.

13. A process according to claim 12, wherein the at  
25 least one thin-film evaporation process is carried out at a mixture flow rate in the interval of 30-150 kg/h·m<sup>2</sup>.

14. A process according to claim 1, wherein said stripping processing step is carried out effectively at a mixture flow rate in the interval of 80-150 kg/h·m<sup>2</sup>.

30        15. A volatile cholesterol decreasing working fluid, for use in decreasing an amount of cholesterol present in a marine oil in free form, the volatile working fluid

comprising at least one of a fatty acid ester, a fatty acid amide and a hydrocarbon, or any combination thereof.

16. A volatile cholesterol decreasing working fluid according to claim 15, wherein at least one of a fatty acid ester and a fatty acid amide is obtained from at least one of vegetable, microbial and animal fat or oil.

17. A volatile cholesterol decreasing working fluid according to claim 16, wherein the animal fat or oil is a fish oil and/or an oil obtained from sea mammals.

18. Use of a volatile cholesterol decreasing working fluid according to claim 15, in a process for decreasing the amount of cholesterol in a mixture comprising a marine oil, the marine oil containing the cholesterol, in which process the volatile working fluid is added to the mixture and then the mixture is subjected to at least one stripping processing step, preferably a thin-film evaporation process, a molecular distillation or a short-path distillation or any combination thereof, and in which process an amount of cholesterol present in the marine oil in free form is separated from the oil mixture together with the volatile working fluid.

19. A volatile cholesterol decreasing working fluid, wherein the volatile working fluid is a by-product, such as a distillate fraction, from a regular process for production of ethyl and/or methyl ester concentrates.

20. A process according to claim 1, wherein the stripping processing step is followed by the steps of;

- subjecting the stripped marine oil mixture to at least one trans-esterification reaction with a C<sub>1</sub>-C<sub>6</sub> alcohol under substantially anhydrous conditions, and thereafter
- subjecting the product obtained in the step above to at least one or more distillations, preferably one or more

molecular distillations, to achieve a distillate fraction with reduced concentrations of both free and bound cholesterol from which product an amount of cholesterol in bound form has been separated in the residue fraction.

5           21. A process according to claim 20, wherein said C<sub>1</sub>-C<sub>6</sub> alcohol is ethanol.

          22. A health supplement, containing at least a marine oil, which marine oil is prepared according to the process presented in claim 1 or 20, in order to decrease  
10 a total amount of cholesterol in the marine oil.

          23. A health supplement according to claim 22, wherein said marine oil is fish oil.

          24. A pharmaceutical, containing at least a marine oil, which marine oil is prepared according to the process presented in claim 1 or 20, in order to decrease a  
15 total amount of cholesterol in the marine oil.